Exercise 10-- Highwater Rating, Two Offsets , Transition Zones, and Extension– Pearl River

- Use the discharge measurement data in the table below to develop a rating that will pass within reasonable limits of measurement nos. 183-189 and can be used to assign a discharge to the maximum stage of 28.74 ft.

Suggested procedure:
1. Plot all measurements on the graph paper found on the next page.
2. Develop a segment for the lower portion of the rating using end points of 6.5 ft, 693 cfs and 15.5 ft, 5210 cfs. Use an offset of 1.0 ft.
3. Draw a curve through all measurements using the curve above for the range between measurements 183 and 189. You should now have a curve that goes up to a gage height of about 28.3 ft.
4. Now start to decide how to develop a rating that can be extended with a bit more confidence. To do this you will want to:
   a. Decide which measurements should be used to define the upper end of the rating.
   b. Decide on a more appropriate offset for the upper end of the curve
   c. Replot the upper end of the curve using the new offset. To do this you will have to develop a different gage-height scale. Plot this upper rating segment separately in the lower right-hand corner of the graph paper.
5. Finally, check the transition zone of the rating making sure that differences increase smoothly. Use the table below for this part of the exercise.

Note: You can use BARC to develop the high and low segments of the rating and to check for differences per 0.5 foot increases in G.H. BARC, however, will not be useful for the completed rating. The offset for the upper rating segment is too large—it causes BARC to try plotting negative numbers on the logarithmic gage-height scale.

Discharge Measurement Information

Meas. Number	G.H.	Q
183	28.23	90000
184	26.5	64700
185	24.78	41400
186	23.48	24800
187	22.08	16000
188	15.04	4870
189	6.96	819

Table to assess transition zone

G.H.	Q	Difference	G.H.	Q	Difference
16.5			20.5		
17.0			21.0		
17.5			21.5		
18.0			22.0		
18.5			22.5		
19.0			23.0		
19.5			23.5		
20.0			24.0		

Use this area to re-plot upper rating
segment using a second offset

100　　　　　　　　　1000　　　　　　　　　10,000　　　　　　　　100,000